Naval Mission Planning Systems
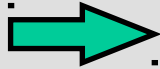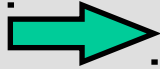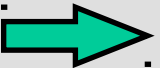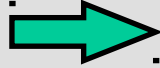
PMA-233

First Pass Success

Mission Planning Users Conference
15-17 February 2000

Captain Richard C. Moebius, USN

Changing Naval Warfare Environment
Increasing Demands, Decreasing Resources

Target Set	→	**Increasingly mobile**
Threat	→	**Mobile and electronically agile**
Aircraft	→	**Multi-mission/single seat, increased processing and "programmability"**
Weapons	→	**Guided, standoff, pre-flight planned**
Operational Concepts	→	**High tempo, maneuver warfare**
National Expectations	→	**Rapid, decisive victory, with minimal losses and enemy collateral damage/non-combatant casualties**
Force Structure	→	**Fewer platforms, weapons, and people**

Changing Naval Warfare Environment
The Mission Planning Gap

PREFLIGHT PLANNING EFFORT (HOURS) — vertical axis

CURRENT FORCE STRUCTURE

200+ SORTIES

TARGET MOBILITY

INCREASED PGMs

HIGH THREAT

LOW THREAT

PLANNING RESOURCE GAP

FUTURE FORCE STRUCTURE

COMPLEXITY OF PLANNING

**While the demands for preflight planning increase,
the people available to plan is going down**

Maslow's Hierarchy of Mission Planning Needs

BATTLESPACE VISUALIZATION, COURSE OF ACTION ANALYSIS, RESOURCE MANAGEMENT

REALTIME REPLANNING DURING MISSION EXECTION

MUTLI-AIRCRAFT COLLABORATIVE PLANNING, DECONFLICTION, STRIKE PREVIEW, TANKER PLAN

THREAT LAYDOWN, WEAPONEERING, CRYPTOKEY LOADING

ROUTE PLANNING, FUEL PLANNING, AIRCRAFT DATALOAD

Responsive Planning
IOC 2005

Force Level Planning
IOC 2004

Combat Mission Planning
IOC 2003

Basic Mission Planning
IOC 2002

Relationship Between JMPS and NCW

DETECT	DECIDE	DELIVER	Kill	BDA
t_1	t_2	t_3	t_4	t_5 t_6

Detection of Target

Receipt of Target Data

Intelligence **Prep** of Battlefield

Targeteering

Mission/Fire planning

Weaponeering

Asset Allocation

Onboard and Offboard Coordination and **Transfer** of Data

Fire **Decision**

Receipt of Target Data

Ingress to tgt

Missile Launch

Impact

Assess

BATTLESPACE VISUALIZATION, COURSE OF ACTION ANALYSIS, RESOURCE MANAGEMENT

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ROUTE PLANNING, FUEL PLANNING, AIRCRAFT DATALOAD

Mission Planning Roadmap

NavMPS Roadmap 2000

CY	99	00	01	02	03	04	05	06

6.2K/6.2.1   **Maintain/Sustain**

Tactical Automated Mission Planning System

Maintenance of Current Systems
F-18; F-14; JSOW; JDAM; SLAM; HARM; FAMP; AH-1; E-2

NAVY PFPS

Navy - Portable Flight Planning Software

△ **N-PFPS 3.1**   △ **N-PFPS 3.2**

Flight Performance Modules fielded upon development and certification. Unclassified Data loading as funding permits.

JMPS V1 Development   **OT**

△ **IOC** **JMPS Basic Mission Planner**

Joint Mission Planning System   **JMPS Components and UPCs**

△ **TAMPS off CV**

Estimated UPC Migration

ARC-210		
C-130	F/A-18	E-2	AV-8B
C-2	F-14	SH-60R	MH-53
T-45	EA-6B	H-60/B/F/H	EP-3
H-46	JSOW	CH-53	ES-3
UH-1	JDAM	V-22	E-6A
AH-1	SLAM	P-3	
TAMMAC	HARM	S-3	
NSPW	FAMP	CH-60 (CSAR)	

ATACS

** F/A-18 A-D only

NSPW Development *

Stand Alone ** and Integrated W/JMPS | **Integrated w/ JMPS**

Weaponeering

Schedule
Naval Migration Plan to JMPS

CY00	CY01	CY02	CY03	CY04

REDS, STRIPP, SIMPLE

TAMPS

N-PFPS

JMPE (v) 1.0 BASIC LEVEL MP

COMBAT LEVEL MP

STRIKE/FORCE LEVEL MP

NSPW

TEAMS (EA-6B)

MPS (AV-8B)

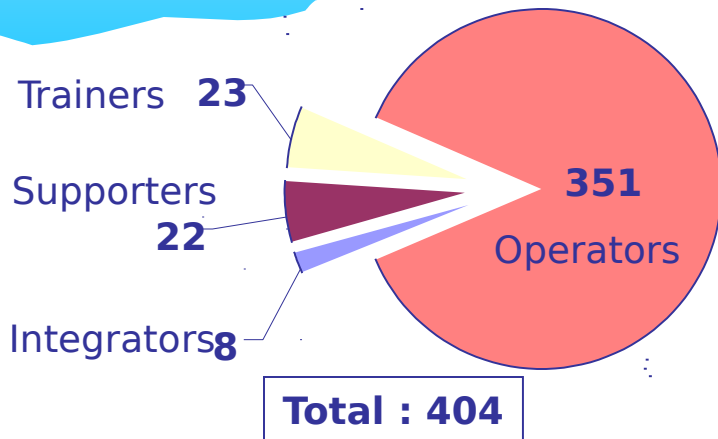# Fleet
Satisfaction Metrics

Objectives

- Determine Baseline Metrics and Measures of Effectiveness of Mission Planning Tools Currently Used by the Fleet
    - TAMPS - Tactical Automated Mission Planning System
    - N-PFPS - Navy-Portable Flight Planning System
    - ATACS - Automated Tactical Manual
    - TSCM - Tactical Strike Coordination Manager
    - WinJMEM - Windows based Joint Munitions Effectiveness Manual
    - TARGET - Tactical Release Gameplan Execution Tool
    - TOPSCENE - Tactical Scene Generator (PMA-205 responsibility)

- Develop a Long Term Process to Effectively Assess User Satisfaction for Feedback into Subsequent Mission Planning Developments and Upgrades

Reaching Out to the Fleet

Site Visits
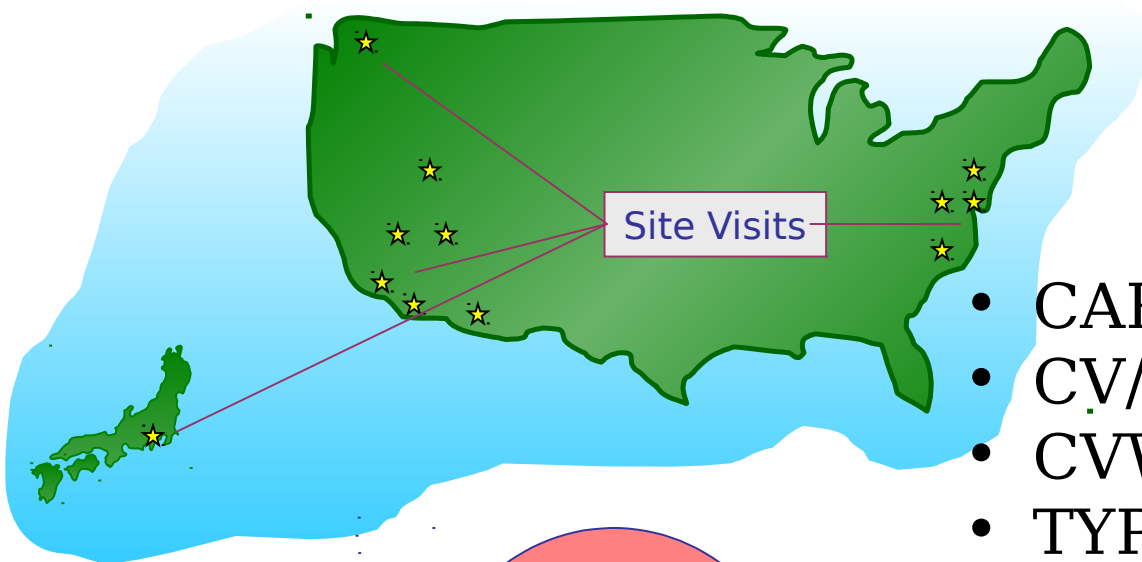
Interview Participants
By Numbers of Commands

- CARGRU - 2
- CV/CV(N) - 3
- CVW - 4
- TYPEWING - 8
- Weapon
  Schools - 7
- MAG - 3
- VFA - 15
- VF - 3
- VMFA - 3
- VMFA(AW) - 7

- T&E - 5
- VAW - 4
- VAQ - 4
- VS - 6
- VP - 3
- HS - 3
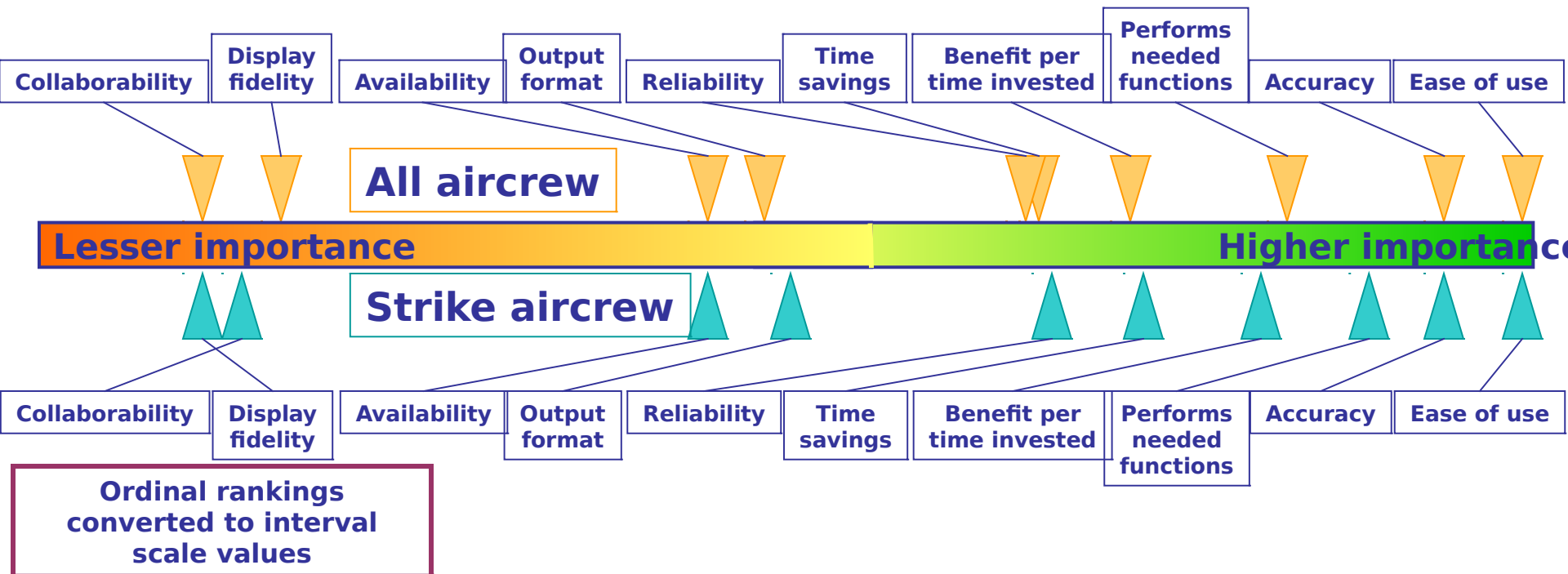- HSL - 5
- HC - 2
- VMGR - 2
- TACRON-1

Trainers **23**

Supporters **22**

Integrators **8**

351 Operators

Total : 404

- "Operator" survey captures the thoughts and concerns of the entire Fleet User customer base

How Do Aircrew Rank General Mission Planning Characteristics?

Rank the following characteristics that can apply to mission planning tools in general.
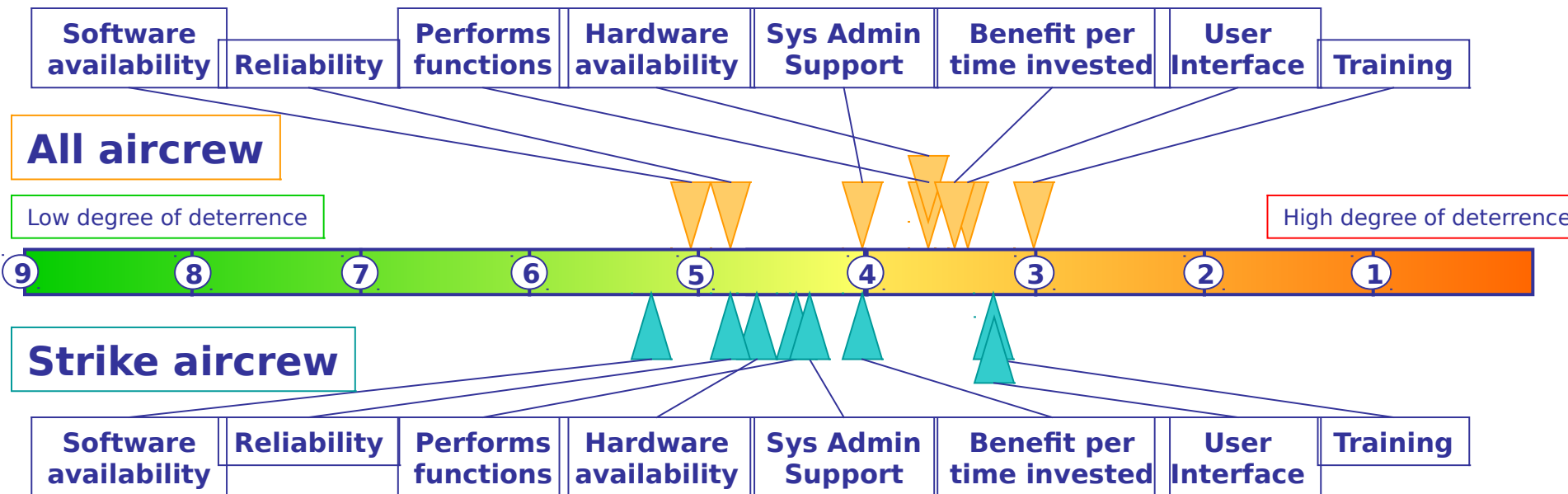
- Clear desire for tools with an easy user interface that provide aircrew with time savings and benefits to amount of expended effort
- Need for accuracy being driven by precision / GPS targeting and weaponeering and rules of engagement (ROE)
- Tool functionality must provide high degree of user satisfaction

All aircrew

Collaborability • Display fidelity • Availability • Output format • Reliability • Time savings • Benefit per time invested • Performs needed functions • Accuracy • Ease of use

Lesser importance — **Higher importance**

Strike aircrew

Collaborability • Display fidelity • Availability • Output format • Reliability • Time savings • Benefit per time invested • Performs needed functions • Accuracy • Ease of use

Ordinal rankings converted to interval scale values

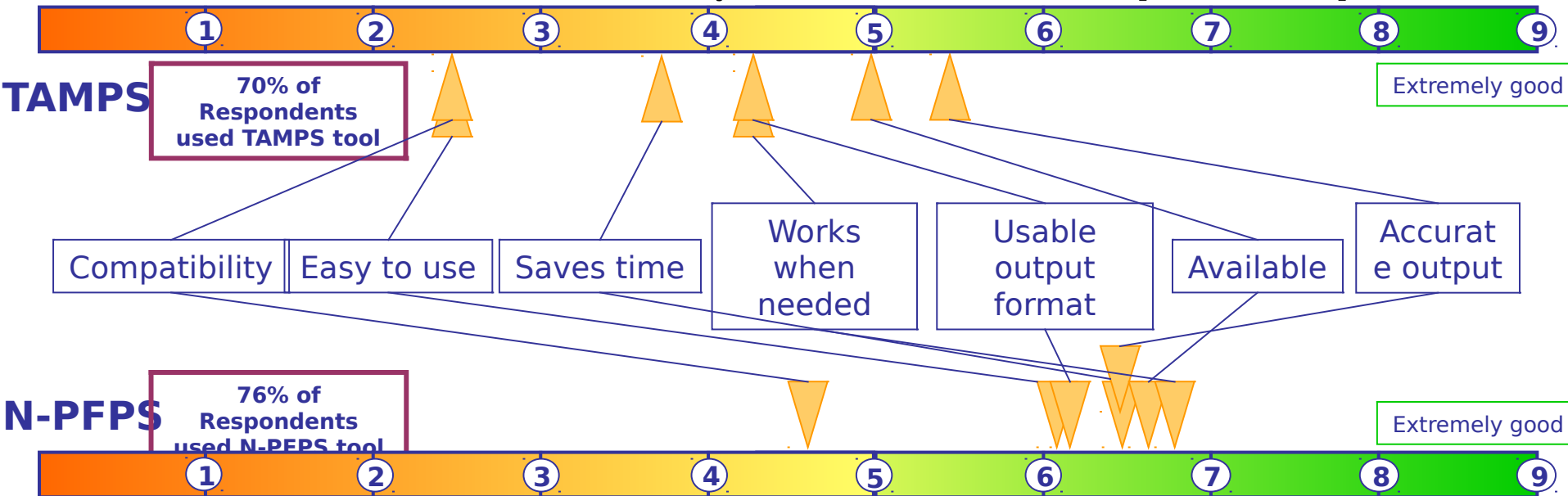# What Factors Deter Aircrew From Using Mission Planning Tools?

> **Indicate the degree that the following factors currently deter more widespread use of mission planning tools on a scale of 1- 9 (1 = high degree of deterrence).**

- Reliability and availability no longer deterring aircrew mission planning
- Characteristics desired the most (User Interface and Time Benefit) currently deter aircrew the most from using mission planning tools
- Tool functionality and system admin support necessary
- Training is needed to overcome interface and functionality shortcomings; a lack of training prevents aircrew from gaining sufficient proficiency to be confident in the tool

Software availability	Reliability	Performs functions	Hardware availability	Sys Admin Support	Benefit per time invested	User Interface	Training

All aircrew

Low degree of deterrence | High degree of deterrence

9   8   7   6   5   4   3   2   1

Strike aircrew

Software availability	Reliability	Performs functions	Hardware availability	Sys Admin Support	Benefit per time invested	User Interface	Training

# Rate Mission Planning Tool Characteristics - TAMPS & N-PFPS

- All the characteristics desired of a mission planning tool are strongly resident in N-PFPS - "N-PFPS is far and away the tool of choice due to its utility and ease." VF aircrew

- TAMPS continues to suffer from an unfriendly user interface which still does not save planning time

- Compatibility rates low because each system still needs the other for full planning capability - "Only tasks F/A-18 fleet uses TAMPS for to this day are the weapons MPMs and the MU waypoint load functions. All additional functionality is wasted and not used because it is not intuitive and not easy to sit down and crank out a profile." VFA pilot

TAMPS

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

70% of Respondents used TAMPS tool

Extremely good

| Compatibility | Easy to use | Saves time | Works when needed | Usable output format | Available | Accurate output |

N-PFPS

76% of Respondents used N-PFPS tool

Extremely good

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

Developers Capture the Needs
of the Fleet for Mission Planning Tools

> **Rate how well the developers of the following planning tools captured the needs of the fleet on a scale of 1- 9 (9 = Extremely good).**

- Developers captured the desires of the user by providing an easy to use interface in N-PFPS, TARGET, ATACS, and WinJMEMS
  - The less training required and the more intuitive the tool, the more apt the tool will be used for its intended purpose
- UNIX based tools that require more, or extensive, training for the planner to be functionally literate will continue to fall into disfavor with aircrew - "TAMPS was initially extremely poor. Now it is just poor… TAMPS has come a long way." VFA pilot
- TOPSCENE rating skewed by the relatively small percentage of users (<9%) and their limited exposure/experience with the tool
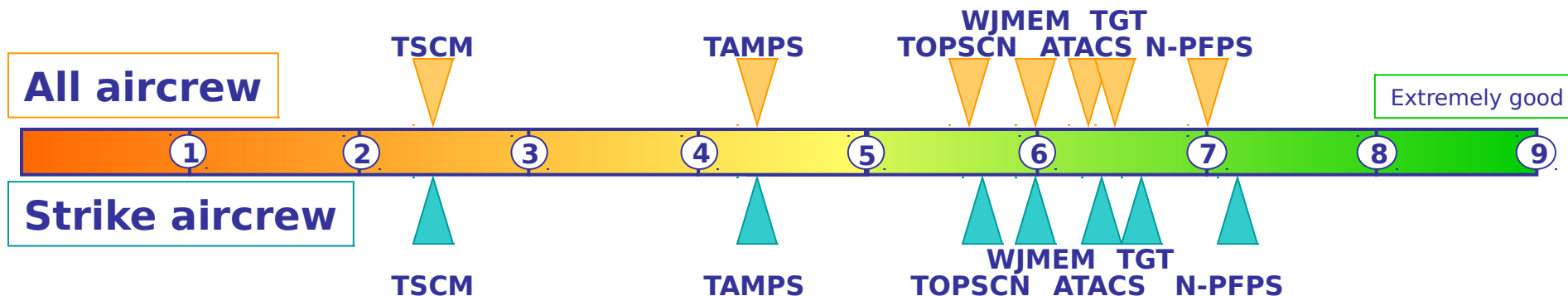
Mission Planning Tool Training:
Availability, Value, and What is Needed

Rate the availability and value of external training received for the following planning tools on a scale of 1-9 (9 = extremely good).
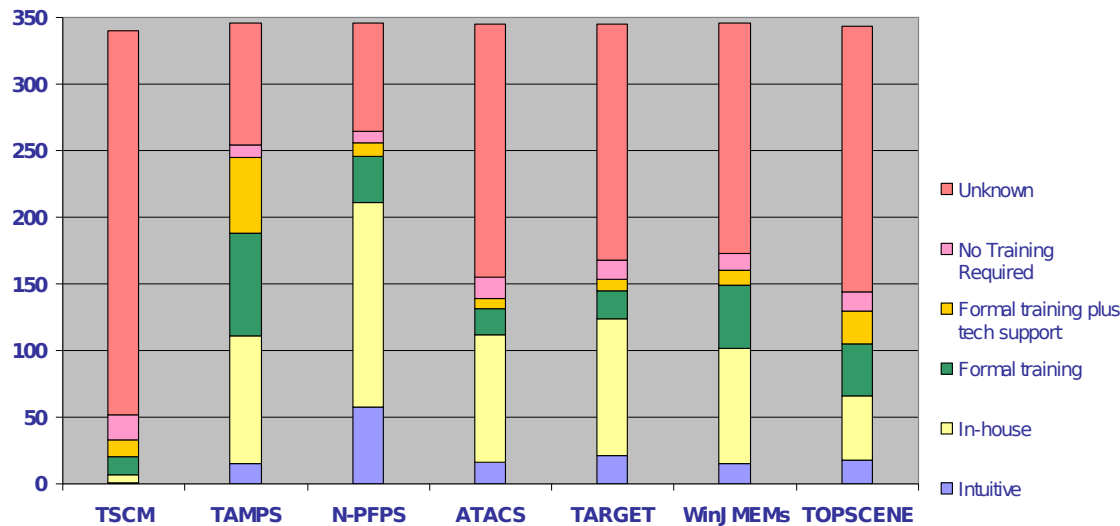
Training Availability

TSCM TOPSCN   WJMEM TAMPS ATACS   TGT N-PFPS

Extremely good

① 1   ② 2   ③ 3   ④ 4   ⑤ 5   ⑥ 6   ⑦ 7   ⑧ 8   ⑨ 9

Training Value

TSCM   TAMPS TOPSCN N-PFPS   WJMEM ATACS TGT

- Training availability tied to:
  - Knowledge that training is even available
  - Training location and distance from command
  - Amount of command travel funds available
- Many aircrew have received formal training on TAMPS, but still concede it is the hardest tool to use
- Most training conducted via weapon schools and in-house
- "Training" was the primary deterrence to tool usage
- Strong opinion by operators that most training should be intuitive or in-house

Training Level "Needed" by Aircrew

Legend:
- Unknown
- No Training Required
- Formal training plus tech support
- Formal training
- In-house
- Intuitive

Categories: TSCM, TAMPS, N-PFPS, ATACS, TARGET, WinJMEMs, TOPSCENE

Y-axis: 0, 50, 100, 150, 200, 250, 300, 350

Future Data Gathering

- Establish Data Base to Track Progress
- Obtain Subsequent Survey Data Either at

  <u>Completion of Each Cruise</u> or <u>Prior to Inchop</u>
  - Via ship riders
  - Distribute results to team members

Questions???